

BOOK REVIEW

Lowland Rice Soils in Thailand by Dr. K. Kawaguchi and Dr. K. Kyuma

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As rice is the most important crop in Japan, emphases have been made on subjects related to improvement of rice production among the studies of agricultural sciences in this country.

In soil science also chemistry of water logged soils has made a unique advance in Japan and Dr. K. Kawaguchi is one of the scientists who made major contributions to this advance. In recent years intensive studies on the morphology of paddy soils were made in relation to their genesis and again he is one of the leaders in this field.

Based on his long experiences with lowland rice soils in Japan, Dr. Kawaguchi became interested in recent years in making broad surveys on lowland rice soils in rice growing countries in the world to establish an over-all understanding of them.

He has been working for several years on this line enthusiastically with his right-hand man, Dr. Kyuma. They are members of the Center for Southeast Asia Studies of Kyoto University and this series of surveys is one of the projects of the Center. A new publication "Lowland Rice Soils in Thailand" is the first report of this series of surveys.

The book with 270 pages consists of the following eleven chapters:

- Chapter 1. Introduction.
- Chapter 2. General Characteristics of the Soils and their Environments.
- Chapter 3. Methods.
- Chapter 4. Samples.
- Chapter 5. Morphological Characteristics as "Paddy Soil".

- Chapter 6. General Chemical and Physical Characteristics.
- Chapter 7. Clay Mineralogical Characteristics.
- Chapter 8. Fertility Characteristics.
- Chapter 9. Microbiological Characteristics.
- Chapter 10. Soil Characteristics — Rice Yield Relationships.
- Chapter 11. Summaries.

It also contains 16 color pictures of typical soil profiles and also full descriptions of profiles as well as analytical data.

I have no space here to introduce the contents of each chapter in detail. However, as it is apparent from the titles of the chapters listed above, the book covers all aspects of soil characteristics and also discusses the relationship between soil characteristics and rice yield. This indicates ambitious approach of the authors.

The book reveals that many of the rice soils in Thailand are rather low in fertility. For example most of the soils in Khorat are low in available nitrogen, deficient in phosphorus, low in exchangeable potassium and also in readily soluble silica, low in organic carbon, and also low in cation exchange capacity because their major clay minerals are kaolinitic. Moreover, some of them have rather high salt content. These characteristics are very unfortunate for the farmers in the area. The situations in Central Valley and Northern Valley are not so bad as in Khorat.

There are two steps in agricultural sciences:

(1) detection of defects, and (2) establishment of countermeasures against the defects. As the first step the defects have been pointed out in this book. This is the major contributions of this publication. It is hoped as the second step the methods to overcome these defects will be established by the authors as well as by the scientists in Thailand.

In tropical countries in Asia the rice yield is generally low. One of the major factors for this low yield is the nature of varieties being used by the farmers. Because of limited application of technology, including water control, weed control, and also fertilizer application, the varieties so far used are adapted to low levels of cultural practices.

However, the velocity of varietal improvement has been increased in the past several years. Varieties with high yield potential are being released by various organizations. For example, IR-8 from the International Rice Research Institute has given at least an evidence that the rice yield in the tropics can be increased by varietal improvement accompanied with more use of fertilizers though IR-8 itself may not be an ideal under some conditions.

The yield potential of varieties has been one of the ceiling factors of the rice yield, but it is now being removed. Then the nature of soils will become more prominent among the ceiling factors of the yield

Fertilizer use is a prerequisite in improving rice yield and also other factors of soils also may limit the rice yield on soils with various defects. Due to these reasons improvement of

the nature of rice soils and also designing a suitable method of fertilizer application will become more and more important.

In Japan, the rice yield has been more or less tripled during the past 100 years. This increase in the yield has been accomplished through the following three phases: (1) improvement of varieties, (2) increase in the use of fertilizer application, and (3) ameliorations of soils. These took place in this order. The third phase came into the picture only some 25 years ago and with soil amelioration the improvement of varieties as well as heavy fertilizer application were accelerated. Of course pest and disease control also contributed to the increase of the rice yield.

It appears for me that the importance of soil amelioration will become more and more important in the tropical Asian rice growing countries in future. Under such circumstances, the publication of this book is very timely. It is expected that many more publications of this series of surveys which deals with lowland rice soils in other countries will come out successively. These publications will provide not only information contained in the books themselves, but also encouragements to the people in these countries to give more emphasis on the works of soils in relation to the improvement of rice production.

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Errata

No.	Page	Wrong	Correct	
Vol. 4, No. 2	40	Table 2	viable seeds	viable seeds (soaked in 1ml of water)
	41	Fig. 3of flottersof blotters
	42	Table 3*in 0.2mlin 0.02ml
	42	Table 3*biabilityviability
	43	Table 5*	Figures.....	Figures.....
	60		Department of Physiology and Genetics	Department of Soils and Fertilizers
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SERIES 2

CENTRAL AGRICULTURAL EXPERIMENT STATION

Established: 1923

Location: Konosu City, Saitama Prefecture

Director: KAMEO NOMOTO

Total Number of Employees: 319 (Research personnel: 167)

Outline of Work:

This station is the national central institution which performs research and experiment on technical problems of agriculture. It is now concentrating its efforts on the establishment of basic technical system of farm mechanization through studying individual factors of the system.

The station also carries out studies on such subjects as the control of weeds and of insect pests and diseases, cross-breeding and fertilizing methods.

At the same time as a regional experimental station, it makes studies on the conditions and trends in agriculture in the Kanto-Tosan district in order to find a guide line for the agricultural modernization as well as the most profitable use of farmland in higher and cooler regions.

Recent Principal Research Finding:

Breeding of new varieties of rice, wheat, barley and sweet potatoes.

Mechanized cultivation standard on lowland and upland in Kanto-Tosan district.

Weed control in rice cultivation.

High yielding of rice by fertilizer application and water control.

Large scale mechanization in dairy based on the self-supplying roughage.

Ecology of the virus diseases of rice plant.

Elimination of viruses from vegetatively propagated plants by meristem culture.

Management of grassland in the mountain region.

Publications:

Annual Report of the Central Agricultural Experiment Station. (In Japanese, free exchange.)

Journal of the Central Agricultural Experiment Station. (In Japanese with English summary, semi-annual, free exchange.)

Organization and Main Research Themes:

- Research Planning and Coordination Division (4 sections).
- General Affairs Divisions (2 sections and 1 branch).
- Crop Division (8 laboratories)—Breeding of rice, wheat, barley and sweet potatoes; Improvement of rice cultivation techniques and weed control.
- Upland Farming Division (7 laboratories) (Kitamoto-machi, Saitama Prefecture)—Improvement of upland farming and cropping system by mechanization; Improvement of upland soil and fertilizer application.
- Director — Environment Division (5 laboratories)—Control of crop diseases and insects; Improvement of paddy field soil and fertilizer application.
- Deputy Director — Farm Operation Division (6 laboratories)—Improvement of paddy field operations and cropping system by mechanization; Improvement in the management of rice producing farms by mechanization.
- Farm Management Division (3 laboratories)—Regional agricultural study the Kanto-Tosan district farm survey and management designing.
- Alpine Farming Branch Station (6 laboratories) (Miyota-machi, Nagano Prefecture)—Improvement of agriculture in elevated cooler regions.